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ABSTRACT

The role played by stress in the prognosis of schizophrenia is not entirely clear. It has been suggested that high premorbid stress levels before first-time psychiatric admission for schizophrenia will be related to better outcome. Subjects, first-time psychiatric admissions classified as schizophrenic by either Schneider's First Rank Symptoms, the New Haven Schizophrenia Index, or the Diagnostic and Statistical Manual II, were assessed at hospitalization and two-year follow-up by structured, standardized interview schedules, and were bifurcated into high- and low-events groups based on their mean life events score. One outcome measure represented the overall level of follow-up functioning; four other measures were residualized on initial assessment scores to provide outcome indices independent of initial scores. Results indicated that a high level of life events stress in the year prior to a first admission for schizophrenia was related to better outcome at the two-year follow-up when the Schneiderian and New Haven diagnostic criteria were used. Further analyses suggested that these results could not be attributed to demographic factors, premorbid status, severity of pathology at admission, or interim stress levels, and probably were not exclusively the effect of "precipitating" life events shortly before hospitalization. (Author/NRB)

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Life Events and Two-Year Outcome in Schizophrenia

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Running Head: Life Events and Schizophrenia

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Abstract

This study was a longitudinal test of the hypothesis that higher aggregate levels of "objective" life events stress before a first-lifetime psychiatric admission for schizophrenia will relate to better outcome. Subjects were all those participants classified as schizophrenic by any one of 3 methods from a large investigation of diagnostic and prognostic characteristics in an inpatient sample experiencing a first psychiatric hospitalization. Subjects were assessed at hospitalization and 2-year follow-up with structured, standardized interview schedules. The 31 Schneiderian schizophrenics, 39 New Haven Index schizophrenics, and 41 DSM-II schizophrenics were then bifurcated at the mean life events score for the entire sample into high- and low-events groups. The test for different group outcomes was made with a multivariate analysis of variance of 5 measures of outcome functioning. One measure represented overall level of follow-up functioning, and the other 4 were residualized on time 1 assessment scores to provide outcome indices independent of initial scores. Where the MANOVA was significant, *t*-tests were then employed to determine group differences in specific outcome areas. Findings supported the hypothesis when the Schneiderian and New Haven diagnostic criteria were used. Further analyses suggested that these results could not be attributed to demographic factors, premorbid status, severity of pathology at admission, or interim stress levels, and probably were not exclusively the effect of "precipitating" life events shortly before hospitalization.

Life Events and Two-Year Outcome in Schizophrenia

Despite plentiful previous research addressing the question, the role played by stress in the prognosis of schizophrenia is still not entirely clear. Phillips' (1953) early study found that a good premorbid case history including a definite precipitating stress prior to hospitalization constituted a signpost for a faster and higher-level remission. Similarly, Zubin, Sutton, Salzinger, Salzinger, Burdock, and Peretz (1961) reviewed numerous clinical reports, all of which were in agreement that stress shortly before schizophrenic onset is a favorable prognostic sign. Vaillant (1964), using the presence of a clear precipitating event as one of 7 positive prognostic indicators, was able to predict clinical course for 82% of 172 schizophrenics. Though his overall 7-point score provided better prediction than any individual criterion, precipitating stress factors were present in 75% of the fully remitted cases versus only 31% of the less-than-fully-remitted group. However, Serban (1975) has questioned Vaillant's findings on methodological grounds. Wallis (1972) followed up 512 male schizophrenics from the British Royal Navy, who showed an inverse relationship between premorbid stress and subsequent time spent in hospital. However, when working status was utilized as an outcome variable, the influence of premorbid stress appeared equivocal. In addition, Wallis (1972) used many "aspects of personality which make living less easy," such as psychopathy, alcoholism, obsessionality and schizoid traits, as "personal stresses," thereby blurring an important distinction between "objective" stress and subjectively perceived stress, which may be dependent upon a patient's degree of pathology or personality type (Cf. Dohrenwend & Dohrenwend, 1978).

Studies finding no positive prognostic significance for high premorbid stress include those of Cole, Swensen, and Pascal (1954), Johanson (1958), and Serban (1975). Cole, et. al. (1954) studied a group of 486 patients with no previous documented

mental illness, 264 of whom were diagnosed schizophrenic. Though severity of precipitating stress proved to be a significant correlate of follow-up outcome (at least one year post-discharge), when other significant indicators were controlled, precipitating stress showed no independent outcome predictability. Thus, stress was an "indicator" in the purely statistical sense but appeared to depend for its prognostic value on variables such as marital status and affective expression. Furthermore, since data in the Cole, et. al., study were not presented separately for schizophrenic patients, the extent to which their findings are true of schizophrenia is uncertain. If Beck's and Worthen's (1973) finding that over half of their schizophrenic subjects had no clear precipitant prior to admission also applies to the Cole, et. al., (1954) sample, then even the "indicator" status of precipitating stress for a specifically schizophrenic group might be cast in doubt. Johanson (1958) followed up 138 male schizophrenics for a period of 14 years and found no prognostic significance for premorbid stress. Serban (1975) studied 419 mostly chronic schizophrenics in order to relate their hospitalization mental status variables, including premorbid stress, to readmission during the subsequent two years. Stress did not correlate with admission functioning level, admission symptom status, or readmission. When chronic and acute subgroups were analyzed separately, once again stress failed to predict readmission.

Other studies assessing stress with instruments tapping a broad range of patients' life events have suggested that relapsing schizophrenics experience more events than non-relapsing schizophrenics (Rabkin, 1980). These studies include a prospective design (Michaux, Gansereit, McCabe, & Kurland, 1967), two retrospective designs (Birley & Brown, 1970; Leff, Hirsch, Gaind, Rhode, & Stevens, 1973), and one study of impairment level among chronic schizophrenics still living in the community 2 or 3 years after hospital discharge (Schwartz & Myers, 1977). In her thorough review of these studies Rabkin (1980) concludes that "life events contribute

an incremental component to the stress level of discharged patients that is, in many cases, associated with subsequent rehospitalization." (p. 424). Although this body of research implies a negative prognostic effect of post-discharge stress, it should be noted that it does not address the question of relationship between premorbid stress and schizophrenic outcome.

The present study was undertaken to test anew the hypothesis that high premorbid stress levels relate to better outcome in schizophrenia. The underlying theoretical idea is that a better premorbid psychological adjustment and stronger ego-resources are available to those schizophrenics requiring hospitalization only after elevated levels of stress. The specific hypothesis was that high life events levels in the year prior to a first hospitalization for schizophrenia will relate to better outcome at 2-year follow-up. This research differed from many of the studies reviewed above in that the present sample was not comprised of chronic schizophrenics. Another difference revolved around a subsidiary question of the research, raised by the observation that most previous positive findings for the stress-outcome relationship appeared in studies assessing clear and definite precipitating events immediately prior to admission rather than broader aggregate measures of major and minor life stresses occurring over a longer period of time. Thus, following from the expectation that the main prediction would receive support, a secondary expectation was formulated--that the life events-outcome relationship is not solely the result of major events ratable as clear precipitants in a case history review or interview assessment.

METHODS

The subjects were among a group of 217 psychiatric patients from a larger study (The First Admission Study; Strauss, Kokes, Ritzler, Harder, & VanOrd, 1978), who were admitted to the hospital for a functional psychiatric disorder for the

first time in their lives. Patients were asked to participate if they were between the ages of 15 and 55, inclusive, had an IQ of 70 or above (from the WAIS), and did not have primary problems with alcoholism, drug abuse, or organic brain disease. Seventy percent (n=217) of the 310 potential subjects agreed to take part. These patients represented all functional-disorder first-admissions over a one-year period from two demographically heterogeneous catchment areas in Monroe County, New York. Patients were interviewed within a week of admission by clinical psychologist or psychiatrist investigators using reliable, structured interview schedules adapted from the World Health Organization (1973) International Pilot Study of Schizophrenia. These included the Psychiatric Assessment Interview (a variation of the Present State Examination) for symptomatology, the Standard Psychiatric History, and the Social Data Form. Following a review of the symptom, psychiatric history, social and employment functioning, and demographic data yielded by these forms and by case records, the clinical interviewers made ratings on the Menninger Health-Sickness Scale (Luborsky, 1962; Luborsky & Bachrach, 1974), the Phillips Scale of Premorbid Adjustment (Farina, Garmezy, Zalusky, & Becker, 1962; Phillips, 1953), and the Strauss-Carpenter Prognostic Scale (Strauss & Carpenter, 1974). At the 2-year anniversary of initial hospitalization, plus or minus 1 month, the interviews were repeated, wherever the subject preferred to be interviewed. The follow-up interview schedules included only minor changes, mostly questions designed to elicit detailed answers regarding the subject's experiences during the interim 2 years.

Only schizophrenic subjects from the First Admission Study sample were studied in this research. Because choice of diagnostic approach to schizophrenia can strongly influence a study's findings (Gift, Struass, Ritzler, Kokes, & Harder, 1980), the authors chose to investigate life events stress and outcome in relation to 3 concepts of schizophrenia. The first concept was a very narrow one comprising a

presumably homogeneous group of patients defined by Schneider's (1959) First Rank Symptoms. The second concept of schizophrenia was a broad one based on the New Haven Schizophrenia Index (Astrachan, Harrow, Adler, Schwartz, Schwartz, & Tucker, 1972). And the third was representative of how the American Psychiatric Association's (1968) Diagnostic and Statistical Manual-II (DSM-II) concept of schizophrenia has been used clinically, since it included all patients defined schizophrenic either by the admitting resident and/or by the research clinician carrying out the standardized interviews. The Diagnostic and Statistical Manual-III (DSM-III; American Psychiatric Association, 1980) was only in the beginning stages during the data collection and reduction phases of the First Admission Study, so that its definition of schizophrenia was not included. However, the final DSM-III concept is similar in many respects to the Schneiderian approach, though it emphasizes already established chronicity more. Schneiderian and New Haven diagnoses of schizophrenia/non-schizophrenia were made by consensus between two of the research team investigators (J.S.S. & T.E.G.), one of whom has had extensive experience with psychiatric, particularly schizophrenic, diagnostic practice (Strauss, 1973, 1975; Strauss & Gift,1977). Eighty-one (37%) of the 217 inpatients were diagnosed schizophrenic by at least one of the 3 systems utilized. There were 36 Schneiderian schizophrenics, 52 New Haven schizophrenics, and 53 DSM-II schizophrenics in the sample. Only 13 patients were classified schizophrenic by all 3 systems. The overlap between Schneiderian and New Haven diagnoses was 27 patients; between Schneiderian and DSM-II diagnoses, 22 patients; and between New Haven and DSM-II diagnoses, 30 patients. When follow-up was completed and cases were eliminated because of missing data relevant to the current study, 31 Schneiderian, 39 New Haven, and 41 DSM-II schizophrenics remained.

Life events stress was measured with a slightly modified Holmes and Rahe (1967) Social Readjustment Rating Scale (SRRS), including those 34 items of the original 43

presumed most likely to be antecedents of psychiatric disorder rather than consequences of it. Six items from the original scale with low score weightings (under 20) were excluded because they were judged very likely to reflect consequences of disorder (such as change in sleeping habits), and two items with higher weights (sex difficulties and revision of personal habits) were excluded on the same basis. One other item, Christmas, was excluded for its probable irrelevance to certain ethnic/religious groups and its unvarying applicability to all Christians.

The SRRS was administered toward the end of a 2- to 2½-hour interview period with the patient at each assessment time. The interviewer asked each scale item in a set order. With probing of the circumstances surrounding any events, he attempted to pinpoint the time when they had occurred. If any event was obviously the result of the patient's pathological condition (e.g., a man quitting his job because he thought his co-workers intended him harm), that event was not scored. Reliability of the SRRS ratings was not systematically investigated although the clinical investigators met every 2 to 3 weeks to rate a live or videotaped interview on all measures and come to a consensus about disagreements. Other studies have reported acceptable levels of reliability for the SRRS (Casey, Masuda, & Holmes, 1967; Gerst, Grant, Yager, & Sweetwood, 1978; Mendels & Weinstein, 1972). Stress scores were computed for the year prior to admission and weighted both by the Holmes and Rahe (1967) factors and by a recency factor on the basis of empirical evidence (Horowitz, Schaefer, & Cooney, 1974) that more recent events provide the most stress at the time a subject is seen. Therefore, scores for events 7 to 12 months prior to admission were multiplied by 1, for events 3 to 6 months prior to admission by 2, and for events 0 to 12 weeks prior to admission by 3.

All patients meeting the criteria for each of the 3 concepts of schizophrenia and from whom complete data had been gathered at both first admission and 2-year follow-up were dichotomized into groups on the basis of their life events scores in comparison with the mean of the entire first-admission sample. Scores at the

mean were considered "high." The sizes of high- and low-life-events groups thus formed were as follows: Schneiderian, 11 high, 20 low; New Haven, 18 high, 21 low; DSM-II, 14 high, 27 low. The main hypothesis then could be expressed as the prediction that schizophrenic patients having higher life events stress scores for each set of diagnostic criteria at first admission should exhibit better outcome at 2-year follow-up.

Outcome was defined by two types of variables. The first was a measure of overall level of follow-up functioning from the Strauss and Carpenter (1972) Level of Function Outcome Scale, based upon duration of psychiatric hospitalization, amount and quality of social contacts, amount and quality of employment, and severity of symptomatology in the year prior to the follow-up assessment. The second type of outcome variable was a measure of change between the two assessment times, controlled statistically to eliminate differences in level of outcome functioning due solely to the level of functioning at hospital admission. This type of variable was created by residualizing time 2 scores reflecting various outcome dimensions upon their comparable time 1 scores. The resulting residual variables with the correlated time 1 and time 2 variability removed then provided outcome measures reflecting change over time independent of initial scores. Four such variables were produced. The first utilized a composite 3-dimension variable, which was the sum of Strauss-Carpenter (1972, 1974) Outcome Scale measures of duration of hospitalization, social contacts, and employment function. The other 3 residualized outcome variables utilized continuous measures of symptomatology severity for schizophrenic symptomatology , general psychotic symptomatology, and suicidal symptomatology described by Harder, Strauss, Kokes, Ritzler, and Gift (1980). Higher scores on overall level of outcome and residualized 3-dimension outcome represented better functioning, while lower scores on the residualized symptomatology measures represented better outcome. High life events stress prior to the initial

schizophrenic admission was expected to predict better outcome in terms of both absolute level of overall functioning (one variable) and changes independent of initial functioning levels (four variables).

RESULTS

The test of the hypothesis was made for each set of diagnostic criteria with a multivariate analysis of variance (Rao, 1965; Fox & Guire, 1974) and a .05 significance level. Life events group membership was the independent variable and the five outcome measures described above were the dependent variables. The null hypothesis was rejected for the Schneiderian ($F(5, 25)=3.23$, $p<.03$) and the New Haven ($F(5,33)=2.91$, $p<.03$) diagnostic approaches but not for the DSM-II approach ($F(5,34)=1.04$, n.s.). All outcome scores were in the predicted direction.

Examination of the most important individual variable differences between high- and low-events groups for Schneiderian and New Haven diagnoses was accomplished with t-tests. For those variables where the Statistical Package for the Social Sciences t-test program (Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975) output indicated that the group variances were non-homogeneous, separate variance estimates (Hayes, 1963, p. 322) were used in making the test. Table 1 presents the individually significant ($p<.05$) variables and those approaching significance ($p<.10$) for each of the two diagnostic systems. Since the large majority of Schneiderian patients were also classified schizophrenic by the New Haven criteria, one might expect these results to be essentially redundant. However, the New Haven high-events group included 7 new patients, over half as many as the 11 in the Schneiderian high-events group. Thus, findings for the New Haven classification also reflect information independent of Schneiderian classification. Nevertheless, individual outcome variables primarily responsible for separating high- and low-event groups were the same in each case. Overall level of functioning and the

residualized measures reflecting changes in 3-dimensional outcome and in schizophrenic symptoms were the most important.

To check for possible confounding factors which might have accounted for these results, the high- and low-events groups defined by Schneiderian and New Haven criteria were compared by *t*- or chi-square tests on initial assessment variables of age, sex, race, marital status, Hollingshead (Note 1) social class, Phillips (1953) premorbid adjustment, Strauss and Carpenter (1974) prognostic status, Menninger Health-Sickness, and interim life events levels. Interim events scores were produced using Holmes and Rahe weights, again also weighted by recency. Weights for events 1-2 years prior to follow-up were multiplied by .5, for events 7-12 months prior to follow-up by 1, for events 3-6 months prior to follow-up by 2, and for events 0-12 weeks before follow-up by 3. In all 18 of these comparisons there was only one significant difference at the conventional $p<.05$ level, and that was a higher level of interim stress for the initially high-life-events New Haven schizophrenics. The number of comparisons involved suggests that this may be only a chance finding anyway, but should it reflect a true relationship, most likely it points to a larger true outcome difference between groups than actually observed in the data. This conclusion is reached because the added interim stress would be likely to create psychiatric difficulties and/or impede "full" recovery (Rabkin, 1980) in the initially high-events schizophrenics, who otherwise might have shown an even better outcome level.

Hence, the results of this study tend to support the main hypothesis, and neither initial levels of patient functioning nor other possibly confounding group differences appear to account for the findings.

The subsidiary hypothesis, that the relationship between life events and outcome is not wholly attributable to "major" events ratable as definite precipitating factors, was examined next. Unfortunately, the MANOVA computer program available for data analysis (Fox & Guire, 1974) did not provide for a covariance adjustment

of the dependent variable vectors for any variable potentially influencing the groups-outcome measures relationship. Thus, the secondary hypothesis could not be tested directly. Instead, an indirect method of addressing the question was employed. A point biserial correlation was calculated between a continuous measure of the severity of any precipitating event(s) during the 1 month prior to admission (Strauss & Carpenter, 1974) and high-event/low-event group membership for each of the schizophrenia/non-schizophrenia dichotomies showing the events-outcome relationship. This measure of association was significant for both Schneiderian (r= .46, $p<.01$) and New Haven (r=.42, $p<.005$) classifications, suggesting (as one might expect) that the presence of precipitating events was an important factor in obtaining either high- or low-events group status for the year prior to first admission. On the other hand, the magnitude of these correlations suggests that only about 20% of the variability in high-/low-events group membership can be "explained" solely by severe precipitating events just prior to hospitalization. Hence, it can be concluded that the aggregation of stress due to other life events during the entire pre-admission year is also important in defining a schizophrenic's stress level at admission, which in turn relates to 2-year outcome. It is unlikely that the 20% of group membership "explained" by the presence of precipitating events is entirely responsible for the events-outcome relationship.

DISCUSSION

The results of this study support the hypothesis that a high level of life events stress in the year prior to a first admission for schizophrenia relates to better outcome at 2-year follow-up. Outcome was measured multidimensionally, with one measure of overall level of functioning, one composite measure of social level, employment level, and time out of hospital statistically controlled for time 1 functioning, and three symptom measures similarly controlled. Demographic variables (age, sex, race, marital status, and social class), premorbid status measures,

pathology severity at admission, and interim life events levels were all checked as possible alternative ways to account for the findings, but none were able to do so. It should be noted, however, that the hypothsis received support only when schizophrenic diagnoses were made with the explicit Schneiderian or New Haven criteria. The less explicit, clinically applied criteria from the DSM-II did not yield a group of schizophrenics for whom stress levels made a prognostic difference. Therefore, the necessity of specifying diagnostic approach in studies of schizophrenia is here underlined once again (Gift, et. al., 1980).

Perhaps in addition to the differences seen when classifying subjects schizophrenic by different diagnostic criteria it is important to note a similarity among all 3 diagnostic methods: in this study all variable means contrasting high- and low-event schizophrenics, even those defined by the DSM-II, implied better outcome functioning among high-event subjects at follow-up. This pattern provides tentative support for the generalizability of the stress-outcome relationship for all "true" schizophrenics, if a "true" schizophrenic is defined by a set of explicit and carefully applied diagnostic criteria. The New Haven Index produced equally as many schizophrenics as the DSM-II approach and hence is an equally unrestrictive concept of the disorder, but it was probably applied more easily due to its clarity, and in a more careful, consistent fashion since about half of the DSM-II diagnoses were made by non-researcher clinicians.

Previous studies (Johanson, 1958; Serban, 1975) not finding any stress-outcome relationship for schizophrenics used diagnostic criteria akin to the DSM-II concept which did not produce significant results here. Those two studies also used largely chronic samples, for whom stress may be less of a prognostic indicator than it is for first admissions.

Though the analysis here cannot be conclusive about the magnitude of the stress-outcome relationship independent of precipitating events shortly before admission,

it is likely that a sizable portion of the relationship is due to pre-admission year, accumulating stresses other than major events occurring within a month of hospitalization.

One methodological limitation of the current study is the relatively small sample size. However, this disadvantage is balanced somewhat by the homogeneity of the schizophrenic groups produced by Schneiderian and New Haven criteria. Other studies have employed less exact criteria, not always applied by the research investigators but rather by clinicians, thereby probably producing much heterogeneity in their larger samples. Of course, the current study requires validation from future research, but it now joins the majority of studies in the area, which find evidence for the existence of a significant relationship between premorbid stress and schizophrenic outcome.

The Cole, et. al. (1954), finding that stress seems to carry no prognostic significance of its own when other outcome indicators are controlled was not replicated by these data. In fact, there were no significant differences between the high- and low-event groups on such indicators as marital status which accounted for the stress-outcome relationship in the Cole data. In addition, affective symptomatology, another Cole, et. al., indicator affecting the stress influence upon outcome, did not prove to be prognostically significant for First Admission Study schizophrenics (Gift, Strauss, Kokes, Harder, & Ritzler, 1980).

A final question regarding the current study might center upon the validity of patients' reporting of their life events prior to a hospital admission. Fontana, Marcus, Noel, and Rakusin (1972) have asserted that severely disturbed patients may report or actually cause high numbers of life events prior to institutionalization in order to flee their illnesses and/or make sense of their pathological experiences. In other words, the events reported may well not be accurate and/or are dependent upon the severity of a patients' pathology. Since the high- and low-event subjects in the present study were not significantly different on overall

health-sickness at first admission, any inaccuracy in the reporting of one group was just as likely to be present in the other group as well. Furthermore, if the Fontana, et. al., hypothesis were true for subjects' pathology at follow-up as well as at the time of hospitalization, the more inaccurate, high-interim-event-reporting group should have been the more pathological, poorer outcome (or initial low-event) group, who would be reacting to or rationalizing their follow-up level of pathology. However, for the Schneiderian schizophrenic groups there was no difference in the level of interim events, and for New Haven schizophrenics more events were reported by the good outcome, initial high-event group, rather than the poor outcome, low-event group. Therefore, the evidence suggests that event reporting by groups in this study was not differentially influenced by patients' degree of pathology, as the Fontana, et. al., hypothesis would predict. In consequence, then, the relationship of life events to schizophrenic outcome observed in this study still appears valid.

Reference Note

1. Hollingshead, A. B. Two-factor index of social position. Unpublished Manuscript, 1957. (Available from the Department of Sociology, Yale University, New Haven, Connecticut.)

References

American Psychiatric Association. Diagnostic and statistical manual of mental disorders, II. Washington, D. C.: Author, 1968.

American Psychiatric Association. Diagnostic and statistical manual of mental disorders, III. Washington, D. C.: Author, 1980.

Astrachan, B. M., Harrow, M., Adler, D., Brauer, L., Schwartz, A., Schwartz, C., & Tucker, G. A checklist for the diagnosis of schizophrenia. British Journal of Psychiatry, 1972, 121, 529-539.

Beck, J. C., & Worthen, K. Precipitating stress, crisis theory, and hospitalization in schizophrenia and depression. Archives of General Psychiatry, 1972, 26, 123-129.

Birley, J. L. T., & Brown, G. W. Crises and life changes preceding the onset or relapse of acute schizophrenia: Clinical aspects. British Journal of Psychiatry, 1970, 116, 327-333.

Casey, R. L., Masuda, M., & Holmes, T. H. Quantitative study of recall of life events. Journal of Psychosomatic Research, 1967, 11, 239-247.

Cole, M. E., Swensen, C. H., & Pascal, G. R. Prognostic significance of precipitating stress in mental illness. Journal of Consulting Psychology, 1954, 18, 171-175.

Dohrenwend, B. S., & Dohrenwend, B. P. Some issues in research on stressful life events. Journal of Nervous and Mental Disease, 1978, 166, 7-15.

Farina, A., Garmezy, N., Zalusky, M., & Becker, J. Premorbid behavior and prognosis in female schizophrenic patients. Journal of Consulting Psychology, 1962, 26, 56-60.

Fontana, A. F., Marcus, J. L., Noel, B., & Rakusin, J. M. Prehospitalization coping styles of psychiatric patients: The goal-directedness of life events. Journal of Nervous and Mental Disease, 1972, 155, 311-321.

Fox, D. J., & Guire, K. E. Command: MANOVA. Documentation for MIDAS: Michigan Interactive Data Analysis System,(Second edition). Ann Arbor, Michigan: Statistical Research Laboratory of the University of Michigan, 1974.

Gerst, M. S., Grant, I., Yager, J., & Sweetwood, H. The reliability of the Social Readjustment Rating Scale: Moderate and long-term stability. Journal of Psychosomatic Research, 1978, 22, 519-523.

Gift, T. E., Strauss, J. S., Kokes, R. F., Harder, D.W., & Ritzler, B. A. Schizophrenia: Affect and outcome. American Journal of Psychiatry, 1980, 137, 580-585.

Gift, T. E., Strauss, J. S., Ritzler, B. A., Kokes, R. F., & Harder, D. W. How diagnostic concepts of schizophrenia differ. Journal of Nervous and Mental Disease, 1980, 168, 3-8

Harder, D. W., Strauss, J. S., Kokes, R.F., Ritzler, B. A., & Gift, T. E. Life events and psychopathology severity among first psychiatric admissions. Journal of Abnormal Psychology, 1980, 89, 165-180.

Hayes, W. L. Statistics. New York: Holt, Rinehart and Winston, 1963.

Holmes, T. H., & Rahe, R. H. The Social Readjustment Rating Scale. Journal of Psychosomatic Research, 1967, 11, 213-218.

Johanson, E. A study of schizophrenia in the male. Acta Psychiatrica Scandinavia, 1958, 125, supplement.

Leff, J. P., Hirsch, S. R., Gaind, R., Rohde, P. D., & Stevens, B. C. Life events and maintenance therapy in schizophrenic relapse. British Journal of Psychiatry, 1973, 123, 659-660.

Luborsky, L. Clinicians' judgments of mental health. Archives of General Psychiatry, 1962, 14, 407-417.

Luborsky, L., & Bachrach, H. Factors influencing clinicians' judgments of mental health. Archives of General Psychiatry, 1974, 31, 292-299.

Mendels, J., & Weinstein, N. The Schedule of Recent Experiences: A reliability study. Psychosomatic Medicine, 1972, 34, 527-531.

Michaux, W., Gansereit, K., McCabe, O., & Kurland, A. The psychopathology and measurement of environmental stress. Community Mental Health Journal, 1967, 3, 358-371.

Nie, N. H., Hull, C. H., Jenkins, J. G., Steinbrenner, K. & Bent, D. H. Description of subpopulations and mean difference testing: Subprograms breakdown and t-test. In N. H. Nie, C. H. Hull, J. G. Jenkins, K. Steinbrenner, & D. H. Bent (Eds.), SPSS: Statistical Package for the Social Sciences (2nd ed.). New York: McGraw-Hill, 1975.

Phillips, L. Case history data and prognosis in schizophrenia. Journal of Nervous and Mental Disease, 1953, 117, 515-525.

Rabkin, J. G. Stressful life events and schizophrenia: A review of the research literature. Psychological Bulletin, 1980, 87, 408-425.

Rao, C. R. Linear Statistical inference and its applications. New York: Wiley, 1965.

Schneider, K. Clinical Psychopathology. New York: Grune and Stratton, 1959. (Hamilton, M. W., Translator).

Schwartz, C. C., & Myers, J. K. Life events and schizophrenia: I. Comparison of schizophrenics with a community sample. Archives of General Psychiatry, 1977, 34, 1238-1241.

Serban, G. Relationship of mental status, functioning, and stress to readmission of schizophrenics. British Journal of Social and Clinical Psychology, 1975, 14, 291-301.

Strauss, J.S. Diagnostic models and the nature of psychiatric disorder. Archives of General Psychiatry, 1973, 29, 445-449.

Struass, J. S. A comprehensive approach to psychiatric diagnosis. American Journal of Psychiatry, 1975, 132, 1193-1197.

Strauss, J. S., & Carpenter, W. T. The prediction of outcome in schizophrenia: I. Characteristics of outcome. Archives of General Psychiatry, 1972, 27, 739-746.

Strauss, J. S., & Carpenter, W. T. The prediction of outcome in schizophrenia: II. Relationships between predictor and outcome variables. Archives of General Psychiatry, 1974, 31, 37-42.

Strauss, J. S., & Gift, T. E. Choosing an approach for diagnosing schizophrenia. Archives of General Psychiatry, 1977, 34, 1248-1253.

Strauss, J. S., Kokes, R.F., Ritzler, B. A., Harder, D. W., & VanOrd, A. Patterns of disorder in first admission psychiatric patients. Journal of Nervous and Mental Disease, 1978, 166, 611-623.

Vaillant, G. E. Prospective prediction of schizophrenic remission. Archives of General Psychiatry, 1964, 11, 509-518.

Wallis, G.G. Stress as a predictor in schizophrenia. British Journal of Psychiatry, 1972, 120, 375-384.

World Health Organization. The international pilot study of schizophrenia (Vol. 1). Geneva, Switzerland: Author, 1973.

Zubin, J., Sutton, S., Salzinger, K., Salzinger, S., Burdock, E. I., & Peretz, D. A biometric approach to prognosis in schizophrenia. In P. Hoch, & J. Zubin (Eds.) Comparative epidemiology of the mental disorders. New York: Grune and Stratton, 1961.

Table 1

Individual Outcome Variables Differentiation High- and Low-Life Events Schizophrenics by Schneiderian and New Haven Criteria

Schneider Diagnosis (MANOVA: $F(5,25)=3.25$, p .03)

Outcome Variable	High-Events (n=11) $\bar{X}$	Low-Events (n=20) $\bar{X}$	t (df)	Sig. Level
Overall Outcome Level	2.45	1.40	-3.26 (29)	.005
3-Dimension Outcome-Residual	-.148	-.944	-2.36 (29)	.03
Schizophrenic Symptoms-Residual	-.484	.711	2.14 (29)	.05
Suicidal Symptoms-Residual	-.276	.113	1.95 (27.24)	.10

New Haven Diagnosis (MANOVA: $F(5,33)=2.91$, p .03)

Outcome Variable	High-Events (n=18) $\bar{X}$	Low-Events (n=21) $\bar{X}$	t (df)	Sig. Level
Overall Outcome Level	2.50	1.67	-2.66 (37)	.02
3-Dimension Outcome-Residual	-.012	-.705	-2.26 (33.35)	.05
Schizophrenic Symptoms-Residual	-.413	.907	2.97 (33.31)	.01
Psychotic Symptoms-Residual	-.239	.585	1.72 (37)	.10